EPA Region 5 Records Ctr.
393371

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June 2002

You are invited to comment on

THE PROPOSED PLAN and OTHER REMEDIES CONSIDERED FOR THE SOUTH DITCH SEDIMENTS

NEW JERSEY ZINC/MOBIL CHEMICAL SUPERFUND SITE

DePue, Illinois

What is the South Ditch? The South Ditch is a ditch between the plant property of the New Jersey Zinc/Mobil Chemical Superfund Site and Lake DePue. (For more information on the site, see the last page.) Historically, the ditch has received runoff from the former plant property. Because of the nature of past operations on the plant property, the runoff contained high levels of metals that contaminated sediments in the ditch. These contaminated sediments are called "unnatural" sediments. In 1995, the State of Illinois and the potentially responsible parties (PRPs) signed an interim consent order[1]. "One of the requirements of that order was for the PRPs to investigate the sediments in the South Ditch, and, if necessary, construct a remedy for the sediments. The PRPs completed this investigation in 1996.

What are the opportunities to comment? The PRPs have prepared, with Illinois Environmental Protection Agency (Illinois EPA) oversight, a study of alternative remedies for the ditch. The Illinois EPA is proposing one of the alternatives, called the Proposed Plan, as the South Ditch remedy. This fact sheet describes the alternatives and the Proposed Plan for the South Ditch. The public is invited to comment on all of the alternatives plus the Proposed Plan. The enclosed flier describes procedures for submitting written comments, the date on which a hearing will be held to receive oral comments and the opening and closing dates for the comment period. Your comments are important and will be carefully considered before the Illinois EPA makes a final decision on the remedy for the South Ditch sediments.

Who are the PRPs?The Superfund law specifies that potentially responsible parties are past and present owners and operators of the site. In this case, the potentially responsible parties are Viacom International Inc., ExxonMobil Corporation and Horsehead Industries, Inc. These three companies call themselves the "DePue Group". Since DePue citizens have expressed confusion about the name "DePue Group" thinking it belongs to a group of local citizens, this fact sheet will refer to these three companies as the potentially responsible parties (PRPs).

What is the role of the Illinois EPA? The Illinois EPA oversees the work of the PRPs to ensure that samples are collected and other work conducted as described in the Illinois EPA approved work plan.

What is the concern with the sediments? There are two concerns. One concern is for human health. The second is an ecological concern, that is a concern about plants and animals that may be affected by the ditch sediments. The following evaluation of the risk that the sediments might pose to human health and the environment is based on the 1996 investigation results.

Human health risk. The land is in the annual floodplain of the Illinois River and unsuitable for residences, therefore risk was not considered for residential use. Risk was considered for two other

scenarios. The first is for a child trespasser, that is, for a child that comes onto the property and plays for four hours per day, 50 days per year for six years. The second concern is for a construction worker who is digging in the sediment for short periods of time.

Conclusion. There are no standards for metals in sediments. Since there are no standards, the U.S. EPA and Illinois EPA have calculated screening values to serve as guidelines in evaluating whether a certain concentration of chemical poses a threat to humans. The Illinois EPA and U.S. EPA consider exposure to a chemical at concentrations above the screening value to pose either a potential cancer or non-cancer risk.[2] Exposure can be from eating, drinking, breathing or touching a chemical, or in this case sediment that contains the chemical. An example of a non-cancer risk, is a concentration of lead that would damage the developing nervous system of a child.

The maximum levels of arsenic, copper and lead in South Ditch sediment exceed screening levels for a child trespasser. The metal concentrations in the South Ditch sediment also exceed the Illinois EPA arsenic, cadmium, copper, lead and zinc screening levels for construction workers.

Ecological risk. Ecological risk was measured by placing two benthic organisms (midge larvae and scud) in samples of sediment collected in eight locations along the length of the ditch. Benthic organisms are small organisms that would normally live on the bottom of streams. These organisms are important, because they are food for larger organisms such as fish and waterfowl.

Conclusion. One hundred percent of the midge larvae died within four days in sediment from seven of the eight sample locations. In the eighth sediment sample, 85% of the midge larvae died within four days. One hundred percent of the scud in all eight samples died within four days.

For comparison, two sediment samples were collected from nearby Turner Lake. Within four days, 22 percent of midge larvae died in one sample and 35 percent died in the other sample. For scud, 22 percent died in one sample within four days and 23 percent died in the other sample.

What is the objective of the South Ditch sediment remedy? There are three main objectives for the South Ditch Remedy: (1) to reduce the potential for flood water or water moving through the ditch to move the "unnatural" sediment; (2) to reduce the risk of humans or sensitive plants or animals coming into contact with the "unnatural" sediment, and (3) to be compatible with future site-wide remedies.

Alternatives Studied for the South Ditch Sediments

The PRPs studied four main alternatives: (1) no action with natural recovery, (2) enhanced natural recovery with surface water diversion, (3) above-grade cap for the "unnatural" sediments and (4) removal of "unnatural" sediments. Alternative 4 has three variations—each with a different method of sediment disposal. All the alternatives include short and long-term monitoring. All alternatives except Alternative #1 include institutional controls. In the short-term, these controls would include no trespassing signs and limited fencing. Long-term institutional controls could include restrictions on the deed of the property limiting certain activities such as excavation, swimming and fishing. The costs are given in 1997 dollars, because the original study of remedies was conducted in 1997.

Alternative #1 No Action/Natural Recovery. This alternative is a passive form of action involving natural processes. In this case, the natural process of siltation caused by regular flooding of the Illinois River would gradually cover the "unnatural" sediment. As long as the Illinois River sediment covered the "unnatural" sediment, humans and other organisms would not come into contact with the elevated levels of metals. As developed by the PRPs, this alternative would also include monitoring.

Estimated cost in 1997 dollars: $429,000

Estimated months to construct: 0
Estimated time for sediments to become covered: 30 years

Alternative #2 Enhanced Natural Recovery with Surface Water Diversion. This alternative would be similar to Alternative #1 in that it would rely on the natural process of siltation eventually covering the "unnatural" sediment with a clean layer of silt. The difference would be that this alternative would speed up the process with the construction of a series of dams. First, water currently flowing into the ditch would be directed around the ditch so that the water does not wash the "unnatural" sediment into the lake. Then a series of dams would be constructed across the ditch. The dams across the ditch would be constructed low enough so that when the Illinois River is in flood stage, river water (with sediment), would wash over the dams into the ditch. Low berms would be constructed on both sides of the ditch. As the flood waters recede, the sediment from the river water would be retained behind the dams and berms. This "clean" river sediment eventually would cover the "unnatural" sediment with a cap.

Estimated cost in 1997 dollars: $1,176,000
Estimated months to construct: less than 6 months
Estimated time for sediments to become covered: 5 to 15 years

Alternative #3 Above-Grade Cap. This alternative would involve redirection of the surface water that flows into the ditch so that it would flow into a new drainage ditch. The sediment would be stabilized by adding kiln dust or fly ash. A two to three foot cap of compacted clay soils would be placed on top of a special geofabric that would be laid over the top of the "unnatural" sediments. The cap would be vegetated, and riprap, such as big rocks, would be placed on the sides to prevent the sediment from eroding during rainfall. As long as the cap is intact, it would prevent people or animals from coming in contact with the "unnatural" sediments. As in the Alternatives #1 and #2, institutional controls would be placed on the property to prevent people from digging into or in other ways damaging the cap.

Estimated cost in 1997 dollars: $1,387,000
Estimated months to construct: Less than six months

Alternative #4 Removal of "Unnatural" Sediment. This alternative is divided into three sub-alternatives (4a, 4b and 4c). There are several common elements among the three sub-alternatives.

Common elements of 4a, 4b and 4c.

- ***Actions would comply with the federal Clean Water Act.***

- ***The water now flowing into the ditch, including the spring water in the ditch, would be temporarily rerouted around the ditch.*** In order for the sediments to be removed, the water now flowing through the ditch would be rerouted around the ditch and discharged into Lake DePue at another location for the period of dredging. The water could be temporarily diverted by a combination of interception trenches, shallow groundwater wells and piping in or near the springs.

- ***The sediment would be removed.*** The "unnatural" sediment would be removed by a combination of mechanical and hydraulic dredging. The sediment would be excavated as a slurry, that is, it would be suspended in water. The slurry would be piped to a settling basin probably located on the south side of the railroad tracks where the old municipal dump was formerly located. Here the sediment would be allowed to settle out. Most of the water would be returned to the ditch. Three ways of disposing of the sediment were considered and are described below.

Differences in sub-alternatives 4a, 4b and 4c.

The differences in the three sub-alternatives of Alternative #4 are in the method in which the sediment will be disposed.

- ***Sub-alternative #4a.*** In this sub-alternative, the PRPs proposed to transport the dewatered sediment to a nearby fertilizer plant. The zinc and copper in the sediment are valued micronutrients and would be added to the fertilizer being manufactured. The fertilizer plant withdrew their interest in the South Ditch sediments so this option was abandoned.

  Estimates are not available, because this option was abandoned.

- ***Sub-alternative #4b.*** In this sub-alternative, an interim containment unit would be constructed on the former plant property site for the sediment after it has been dewatered in the settling basins and stabilized with fly ash or kiln dust. A permanent remedy for the sediment would be selected later when the remedy for the entire site is selected.

  The interim unit would be constructed over an area of contaminated soil and groundwater on the former plant property. The sediment would be placed on top of a liner, such as recompacted clay and high-density polyethylene (HDPE), to prevent the metals in the sediment from being washed down into the soil below. An aggregate drainage layer such as gravel would be placed on top of the liner before the sediment. Water draining through the sediment would be collected periodically from this drainage layer and sent to the water treatment plant constructed by the PRPs. The water treatment plant was required by the interim consent decree and has been constructed by the PRPs to treat water coming off the plant property so the water meets state and federal regulations before it is discharged into Lake DePue. To prevent rain from entering the containment unit, the unit would be covered with a clay layer graded to shed water, and the clay layer would be vegetated. The current thinking is that this containment unit will be located north of the zinc slag pile toward the west end. The actual location will be determined during the design phase of the project.

  Estimated cost: $1,895,000
  Estimated months to construct. Less than six months

- ***Sub-alternative #4c.*** In this sub-alternative, the sediment would be removed from the settling basins after it is dewatered and stabilized with fly ash or kiln dust and shipped off-site for disposal at a permitted compliant non-hazardous waste landfill.

  Estimated total: $2,404,000
  Months to construct. Less than six months

How are the alternative remedies evaluated? The federal Superfund law specifies the following nine criteria for evaluation of remedies. They are: (1) overall protection of human health and the environment, (2) compliance with relevant state and federal law, (3) long-term effectiveness and permanence, (4) reduction of toxicity, mobility or volume of contaminants through treatment, (5) short-term effectiveness, (6) implementability, (7) cost, (8) state acceptance and (9) community acceptance.

What is Illinois EPA Proposed Plan? Illinois EPA Proposed Plan is Alternative #4b, which is removal of "unnatural" sediment and consolidation of the sediment in an on-site interim containment unit. This alternative would protect human health and the environment in the short and long-term and comply with state and federal environmental regulations. Since the sediment is actually removed from the ditch, 4b is more permanent than alternatives 1, 2 and 3. In addition, 4b is estimated to cost $509,000 less than 4c.

How much sediment would be removed? Approximately 8,000 cubic yards of sediment would be removed. The "unnatural" sediment has characteristics distinct from the sediment in the surrounding area. For example, the "unnatural" sediment is much looser and of a different color. Determination of which sediment will be removed will be based on these physical characteristics. In later phases, a comprehensive investigation of the area surrounding the South Ditch and Lake DePue will be conducted.

The mouth of the South Ditch has moved over time. The Illinois EPA is aware that the mouth of the ditch may have moved over time and that contamination may be located in other places in the Southeast Area (see map). The whole Southeast Area will be investigated in later stages of the project, and if necessary, additional remedies will be constructed.

Who will conduct the South Ditch remedy? The PRPs will construct the remedy for the South Ditch with Illinois EPA oversight.

Is the remedy implementable? The Illinois EPA's position is that the Proposed Plan can be implemented—it may be difficult but it is possible. The PRPs, at a recent citizens' advisory group meeting, raised questions about their ability to meet water quality standards during dredging. The Illinois EPA's position is that it is highly important to keep additional contaminated sediment from entering the lake and that every effort should be made to meet water quality standards. The Agency takes into account naturally occurring disturbances of the sediment, such as wind and wave conditions, when considering compliance, but releases of contaminants caused by dredging can and should be avoided to the greatest extent practicable. The Illinois EPA Proposed Plan, however, does allow the PRPs to conduct treatability studies. If the PRPs demonstrate through treatability studies that they cannot meet the standards, then the Illinois EPA will reconsider its position.

How will the final decision about the South Ditch sediments be made? The Illinois EPA and U.S. EPA will carefully consider all the public comments made during the public comment period including the oral comments at the hearing and the written comments submitted to the Illinois EPA hearing officer. See the enclosed flier for more information on submitting comments. After considering these comments, the Illinois EPA will make a final decision about the remedy in consultation with the U. S. EPA. The Illinois EPA will write a Record of Decision, which will include a summary of comments received during the comment period and the Agencies' response to these comments. The Record of Decision will be advertised in the local newspaper and will be placed in the Selby Township Library in DePue.

When is construction planned to start? The PRPs plan to begin design and perhaps construction this fall. Work is scheduled to be completed by the fall of 2003.

What are the next steps for the remainder of the project? The PRPs have completed the field work for the site wide investigation. The Illinois EPA is waiting for the PRPs to submit a draft report of investigation results for review. The Illinois EPA expected to receive this document in September 2001. After the report meets Illinois EPA approval, the Agency and PRPs will determine what information is still needed to design a remedy for the site. A Phase II investigation will be designed and implemented to gather this missing information.

What is the New Jersey Zinc/ Mobil Chemical Superfund Site? A primary zinc smelter and other industrial processes were located at the New Jersey Zinc/Mobil Chemical site in DePue from the early 1900's until the late 1980's. See map on page 1 for the location of the site. The main concern at former zinc smelters is possible contamination with metals such as zinc, cadmium, copper, lead and

arsenic. The purpose of the project is to evaluate whether past plant operations have affected the properties on or around the site and to remedy harmful effects if necessary. The site was placed on the federal Superfund list in 1999. Superfund is the common name given to a list of the nation's most hazardous sites that are eligible for investigation and, if necessary, a remedy under the Comprehensive Environmental Response, Compensation and Liability Act.

For More information

Contacts: Virginia Wood, Illinois EPA Community Relations Coordinator at 1021 North Grand Ave. East; P.O. Box 19276; Springfield, IL 62794-9276. Her email address and phone number are Virginia.Wood@epa.state.il.us and 217/785-1269.

Rich Lange, Illinois EPA Project Manager at P.O. Box 1515, LaSalle, IL, 61301. His email address and phone number are Rich.Lange@epa.state.il.us and 815/447-2125.

The PRPs have asked that a contact for their group be listed. The PRP contact is Jim Frank, Frank and Cowles, 7226 N. State Route 29, Springfield, IL 62707, telephone number 217/487-7686.

Illinois EPA Web Page: Project fact sheets are also available on the Illinois Web Page: www.epa state.il.us/community-relations/fact-sheets.html

Repositories: The Illinois EPA has placed the full remedial investigation report of the South Ditch, the study of remedies and other project information in the Selby Township Library in DePue for public review (815/447-2660). Please call for hours.

Administrative Record File: The administrative record file contains all documents upon which project decisions are based. This file is located in the Springfield Office of the Illinois EPA. To review the file, call for an appointment at 217/782-9878. A copy of the file will be located at the Selby Township Library.

[1] A consent order is a legally binding court order agreed upon by the parties entering into the order, which enumerates the benefits to and obligations of all the parties. In this case, the consent order was filed in the 13th Judicial Circuit Court in Bureau County, Illinois.This order is "interim" because it covers only investigations, design of the remedy and certain actions such as the remedy for the South Ditch. A second order will be negotiated for the implementation of the overall remedy for the site.

[2] For more information on how risk is calculated, see the Proposed Plan and the study of South Ditch remedies. These documents are in the project repository at the Selby Township Library in DePue.